

Remarks

The non-final Office Action dated April 19, 2005 has been received and its contents carefully noted. Claims 1-13 are pending in the application. The Examiner rejects claims 1-13 under 35 U.S.C. §102(b) as being anticipated by the Craninckx et al. IEEE Journal Publication that was cited by the Applicant in the Information Disclosure Statement.

The Examiner objects to claims 2-6, 8 and 13 for the informalities listed at paragraph 1 on page 2 of the Office Action. The Examiner rejects claims 1-12 under 35 U.S.C. §112, second paragraph for the reasoning set forth in paragraph 3 of the Office Action.

The drawings filed on September 26, 2001 have been accepted by the Examiner and the references cited in the Information Disclosure Statement have been considered in the examination of the application as indicated by the Examiner's initials and signature dated April 5, 2005.

In response thereto, Applicant has amended some of the existing claims in an effort to place the application in condition for allowance. Reconsideration of the objection and rejections of the claims is respectfully requested. The following comments are offered on the cited prior art and it is trusted that they will be persuasive in bringing about a favorable reconsideration and allowance of the claims of the application.

Claim Objections

Claims 2-4, 8 and 13 have been amended to correct the informalities noted by the Examiner. As corrected, Applicant submits that the claim objections are overcome and respectfully requests withdrawal of the claim objections.

Claim Rejections 35 U.S.C. §112

Applicant has amended the claims as set forth above to overcome the Examiner's rejection in view of the reasons in paragraph 3 as understood by Applicant and respectfully requests that the claim rejection under 35 U.S.C. §112 be withdrawn.

Claim Rejections 35 U.S.C. §102

The Examiner rejects claims 1-13 as being anticipated by the Craninckx et al. IEEE Journal Publication for the reasoning set forth in paragraph 5 of the Office Action. Applicant respectfully traverses the Examiner's rejection. The Craninckx reference does not teach, suggest or disclose Applicant's invention nor the technical solution as provided by the invention. Specifically, the Craninckx reference does not teach, suggest or disclose a polyphase filter as asserted by the Examiner at page 4 of the Office Action as being equivalent to the M/S half speed circuit means. Specifically, the Craninckx reference at page 891 first column starting at the second paragraph through the second column ending at the second full paragraph teaches that the dual modulus operation is based on the 90 degree phase relationship between the output of the master and the slave of a master/slave (MS) D-flipflop.

The main difference between the Applicant's invention and Craninckx reference is the use of a polyphase filter to generate phase difference signals that are input to the multiplexer for selection by the phase control in accordance with the phase control input signal generated by the D-CTRL signal and the MOD signal.

Craninckx further does not teach, disclose or suggest the feature that the phase can be selected freely regardless of the prescaler state when the invention is used a phase locked-loop (PLL).

In claim 1, the input signal comprises signals having a phase difference of 90 degrees relative to one another (114, 116, 118, 120) generated by the polyphase filter 102. The Craninckx reference discloses and teaches the use of dividers ("flipflop") to generate a 90 degree phase difference signal and then divides the divided signal a second time. Therefore, the frequency of the input signal is divided by two. In contrast, in Applicant's invention the frequency of the input signal is not divided by two.

Craninckx does not teach, suggest or disclose a polyphase filter and therefore lacks an essential claim element to provide the technical solution of Applicant's invention, namely a phase control for generating said multiplexer control signal in response to the presence of an input D-CTRL word signal containing information relating to the phase of the signal to be selected from the polyphase filter.

Accordingly, Applicant submits the Craninckx reference is deficient with respect to at least not teaching, disclosing or suggesting a polyphase filter for producing one or more output phase signals selectable by a multiplexer in accordance with a multiplexer control signal and therefore fails to teach, disclose or suggest a critical claim element required in independent claim 1.

With regard to claims 2-8, these claims depend from independent claim 1 and it is submitted that these claims are likewise distinguishable over the Craninckx reference for similar reasons and further for limitations clearly set forth therein.

With respect to claim 9, Applicant brings to the Examiner's attention that the present invention is used in a fractional N type phase locked-loop (PLL) wherein the phase selecting is independent of the prescaler. In contrast, the Craninckx reference discloses a dual modulus prescaler wherein the phase selecting is controlled by the

prescaler output signal. Accordingly, the Craninckx reference does not teach, disclose or suggest that the phase selecting is independent of the prescaler. Claim 9 recites "means for selecting at least one phase signal of said quadrature signal in accordance with a phase selecting control signal corresponding with the number of the modulus". As disclosed and claimed, the phase selecting is independent of the prescaler because the prescaler is not controlled by the output signal as taught by the Craninckx reference.

The Applicant also brings to the Examiner's attention that in the invention as disclosed and claimed, the fractional multi modulus prescaler does not respond to a subsequent frequency control signal without first returning to an original selected phase of the quadrature signal so that the generation of multi modulus spurious frequency signals is prevented. This feature is described in the specification at page 4, line 30 to page 5, line 5 and in claims 9 and 13. Craninckx is deficient with respect to this claim element in addition to the claim elements identified above. Accordingly, Applicant submits that independent claims 9 and 13 are likewise distinguishable over the Craninckx reference for at least the reasoning set forth.

Claims 10, 11 and 12 are dependent on independent claim 9 and it is submitted that these claims are distinguishable over the Craninckx reference for similar reasoning and further for limitations clearly set forth therein.

In summary, Applicant submits that the present invention as disclosed and claimed is not anticipated by the Craninckx reference for at least the above reasoning. Craninckx does not teach, disclose or suggest a polyphase filter to generate phase difference signals that are input to a multiplexer for selection by the phase control in

accordance with the phase control input signal generated by the D-CTRL signal and the MOD signal.

Accordingly, it is submitted that the present invention as disclosed and claimed is readily distinguishable from the prior art for the reasons indicated. Applicant's invention is not disclosed by any of the prior art and there is no fair basis that Applicant's invention is obvious or anticipated in regard to such prior art. If the invention was obvious, it would have been adopted before in view of its advantages.

Conclusion

In view of the foregoing amendments and remarks, it is respectfully submitted that all of the claims are allowable and early favorable action is earnestly solicited. The Examiner is invited to call Applicant's attorney if any questions remain following review of this response.

Respectfully submitted,

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